

# Rise of Lost Worlds

## A Cultural History of the Dinosaur Park, Part 2: Carl Hagenbeck's Extinct Monsters

MIZOI, Yuichi

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### Introduction

The second part of the article series *Rise of Lost Worlds* features the exhibition of prehistoric animals at the Animal Park Hagenbeck (Tierpark Hagenbeck). It was founded in Stellingen, now a city district of Hamburg, by the German animal dealer Carl Hagenbeck (1844–1913). His animal park was a ground-breaking zoo introducing the three-dimensional 'panorama' in which animals roamed freely. In addition, in the eastern corner is the 'Primaeval Landscape' (Urweltlandschaft). It was an area filled with prehistoric monsters

restored by the sculptor Josef Pallenberg (1882–1946).

Approximately half a century after the British artist Benjamin Waterhouse Hawkins (1807–94) restored extinct animals for the Crystal Palace Park at Sydenham, Hagenbeck decided to reconstruct a prehistoric landscape with life-sized dinosaur models (1909/10) for his park. Visitors can still see an enormous *Diplodocus* (Figure 1) walking on the left shore of a lake and an *Iguanodon* stretching his head upwards in search of threats. Simultaneously, a baby *Triceratops* hides behind an adult who confronts another appearing from the water. Aquatic monsters inhabit the lake, and a *Plesiosaurus* visits the shore, where an *Allosaurus* devours the carcass of a *Brontosaurus*. At the right end of the landscape, a *Stegosaurus* fights a carnivorous *Ceratosaurus*.



Figure 1. The *Diplodocus carnegii* restored by Josef Pallenberg  
(Photographed by the author, 2022)

What did Hagenbeck intend to represent through his 'lost world' with Pallenberg's assistance? How deeply has the scientific and cultural climate at the time of imperialism influenced Pallenberg's restorations and the entire landscape? Although they tried to reconstruct the lost world, which no one alive had ever seen, as 'real' as possible, the forms, relations and behaviours of extinct animals were inseparable from their then collective image. Chapter 1 focuses on Hagenbeck's career as an animal dealer and his concept of the panoramic exhibition and 'Primaeval Landscape'. Chapter 2 features the characteristics of Pallenberg's sculptures and the landscape's construction process, while I explore the cultural-historical background of the prehistoric exhibition at Hagenbeck's Animal Park in Chapter 3.

## **1. Hagenbeck's Animal Park and the Concept of the 'Primaeval Landscape'**

### **1.1. Carl Hagenbeck, the Great Animal Dealer**

Carl Hagenbeck was a world-famous animal dealer from Hamburg. His father, Gottfried, a fishmonger, began to trade seals, lions, hyenas, gazelles and other wild animals. Carl inherited the animal trade from him and developed it in the late 19th century, when the German Empire (1871–1918) was founded, grew in national power and became a rival of the British Empire.<sup>1)</sup>

As his business expanded, his agents appeared in the tropical forest in Africa, the Jungle in India and the Siberian and Mongolian steppe to collect animals.<sup>2)</sup> Haug von Kuenheim writes that Hagenbeck gathered information about wild animals, organised animal transport and supported the agents' activities from the Hamburg headquarter (Tierpark am Neuen Pferdemarkt). At the height of the animal trade, he had 20 'travellers' or expedition leaders and 15 animal stations settled in Europe, Africa and Asia under his command.

The pygmy hippopotamus from Liberia, Mongolian Przewalski's horse, and African wild ass belonged to strange creatures brought to Western countries by the animal dealer. Furthermore, he attempted to find a living dinosaur in Africa (see Chapter 3). Hagenbeck's customers were zoological gardens in Europe, America and Asia but also aristocrats and entrepreneurs such as P. T. Barnum, the legendary American showman. His company was also related to the war against the indigenous people in German Southwest Africa in 1906 by providing 2000 dromedaries to the German troops.<sup>3)</sup>

Hagenbeck was also competent in show business: from the 1870s, he organised the controversial 'anthropological-zoological exhibition'. His agents persuaded people living in remote regions, such as Laplanders, Nubians, Eskimos, Somalis, Indians and Hottentots, to visit European countries to exhibit their daily lives in the faithfully reproduced village with domestic animals. In addition, they performed battles, dances, processions and religious ceremonies. Such exhibitions were often held in zoos. For instance, when his 'Ceylon Caravan' was exhibited at the Jardin d'Acclimatation, a zoo in Paris, one million people came to see them in two and half months.<sup>4)</sup> Hagenbeck also successfully ran animal circuses. By selecting adequate individuals from his animal collection and training them patiently, his trainers could show lions, tigers, elephants and other dangerous animals performing amazing tricks.<sup>5)</sup>

In addition, those shows provided Hagenbeck opportunities to learn about the full-scale statues of extinct animals, produced by Waterhouse Hawkins under the supervision of a British anatomist Richard Owen (1804-92), at the Crystal Palace Park. The animal and ethnographic groups organised by Hagenbeck visited the park at the end of the 19<sup>th</sup> century.<sup>6)</sup> Hagenbeck was at the palace to exhibit the 'Somali Village' just when a new plaster replica of *Diplodocus*' skeleton, presented by the American steel baron Andrew Carnegie

(1835–1919), was unveiled at the South Kensington Museum (1905).<sup>7)</sup> As Alexis Doworsky writes, the dinosaur display in England must have never left the animal dealer's mind.<sup>8)</sup>

## 1.2. Construction of the Animal Park and its 'Primaeval Landscape' in Stellingen

The accumulation of these experiences led Hagenbeck to conceive a new concept of 'panorama' that would later characterise his animal park and dinosaur display. According to Lothar Dittrich and Annelore Rieke-Müller, the panorama was originally the large painting of landscapes attached to the inside wall of a cylindrical building. It allowed people to experience the virtual tour of remote lands such as the German colony in Africa. They also combined paintings with three-dimensional objects, such as artificial rocks, and the latter began to attract more attention than the former.<sup>9)</sup>

Hagenbeck's version of the panorama, coined the 'Natural-Scientific Panorama' by him, displayed stuffed or living animals in a picturesque landscape. In 1896, he exhibited the 'Ice Sea Panorama', consisting of living polar bears, seals swimming in a 270 sq m pond, seabirds, artificial ice and a background painting, for the industrial exposition in Berlin-Treptow. Moats, cleverly concealed from the view, separated seals from polar bears and visitors from animals. In addition, he brought it to the St. Louis World's Fair Exposition in 1904,<sup>10)</sup> where he probably saw a life-size restoration of a stegosaurus based on a scale model produced by Charles R. Knight (1874–1953), a famous animal artist.<sup>11)</sup> Alongside the 'Ice Sea Panorama', Hagenbeck exhibited another version representing southern regions with various wild animals, including lions, leopards, hyenas, zebras and kangaroos.<sup>12)</sup>

Meanwhile, Hagenbeck sought land in Stellingen, north of Hamburg, to

house his growing animal collection. Subsequently, he started constructing an animal park there. Following its opening in 1907, visitors could see two enormous *living* panoramas representing the natural landscape. The first panorama consisted of a large bird pond, an enclosure for herbivores, a gorge inhabited by big cats and eagles and a high mountain rising at the far end of the landscape (Figure 2). Hidden moats and streets separated the herbivorous and carnivorous animals so visitors could see a united landscape in which all animals seemingly coexisted. Next to it, the 'Ice Sea Panorama' similarly exhibited animals from cold regions, such as polar bears, sea lions, seals and penguins.<sup>13)</sup>



Figure 2. The 'Panorama' at Hagenbeck's Animal Park  
(Photographed by the Author, 2022)

In 1908, the animal park's site grew beyond Kaiser Friedrich Street,<sup>14)</sup> and new facilities, including the 'Primaeval Landscape' with dinosaur models, were to be constructed there. Hagenbeck first announced the dinosaur exhibition

plan in September of the same year.

A lake will be created in the middle of the vast park, trees and dense bushes will surround its banks, and the enormous animals from the prehistoric period will rise among the bushes. The huge Brontosaurus will raise its immense neck over the treetop, and clumsy saurians will crawl ashore from the water. The whole bestial primaeval world will be revived through artificial constructions.<sup>15)</sup>

In addition, Hagenbeck explained that a house for apes, an ostrich farm, an animal breeding lot and a 'Somali Village' would be constructed in the same area, and a wide road and miniature railway would surround the lake.

The original idea of the prehistoric landscape also appears in his *Beasts and Men* (*Von Tieren und Menschen*, 1908): in addition to a 40-metre-long brontosaur, visitors would find giants such as the Stegosaurus and Ceratosaurus 'towering 15 metres' and believe they are 'moved back to the prehistoric world.'<sup>16)</sup>

These texts show that Hagenbeck intended to display full-scale models of extinct animals in a prehistoric variation of 'panorama'. The geological section at the Crystal Palace, where life-sized models of dinosaurs stand in a natural landscape, could have influenced him, too.

The animal dealer requested Josef Pallenberg, a young animal sculptor from Cologne, to restore prehistoric animals. In 1910, the sculptor restored all the animals belonging to the 'first series'—as described later. The next series was planned to follow but never realised. The prehistoric panorama in Stellingen consisted of trees, bushes, artificial rocks and a small lake that was a part of an enormous lake and separated from it by a bridge. Plants and rocks

hid objects unrelated to the prehistoric landscape from view to enhance the illusion. Rocks on either side of the lake housed the miniature locomotive or facilities exhibiting recent reptiles, amphibians, fish and insects.<sup>17)</sup> In addition, visitors could run through extinct monsters riding the miniature train along the lake.<sup>18)</sup>

In an article in *The Strand Magazine*, Harold J. Shepstone wrote how Hagenbeck cleverly designed the layout of this area:

The majority of these stone-built monsters occupy that portion of the lake beyond the bridge, and are really not seen until the bridge is reached. Then one of the strangest sights it is possible to imagine bursts into view. All around, peeping out amid the shrubs and trees, standing by the water's edge and emerging from the lake itself, are wonderfully realistic and life-size models of those creatures that dwelt upon this globe from the days of the "thunder lizards" and beyond, down to the time of the mammoth, going back at least seven to ten million years.<sup>19)</sup>

Initially, Hagenbeck used this technique of concealing the landscape until the last minute for the main panorama of the animal park. The guidebook from 1911 recommended visitors to walk along the main street after entering the main gate—now preserved as a historical monument—until reaching a big pond. And 'If you walk around the pond, a wonderful panorama unfolds before our eyes [...].'<sup>20)</sup>

## 2. The Prehistoric Animals Restored by Josef Pallenberg

### 2.1. Pallenberg as an Expert in Animal Sculpting

After being inspired by animals at the Cologne Zoo as a child, Pallenberg



began illustrating and modelling animals and assembling the skeletons of dead animals. He studied sculpting at the Academy of Fine Arts in Düsseldorf, and his work *Boar Hunt* (*Sauhatz*) was highly appreciated at the Industrial Exhibition (1902) held in the same city. After leaving the academy, he received the Golden Medal of the State at the German National Art Exhibition for his *Rominten Deer* (*Rominter Hirsch*). In addition, he began to sell animal sculptures to organisations and personalities, including Carl Hagenbeck.<sup>21)</sup>

Pallenberg's sculptures, now preserved in the Aquazoo Löbbecke Museum and Castle Benrath in Düsseldorf, highlight his passion for natural and precise sculpting. After moving into a workshop in Düsseldorf-Lohausen, he filled it with animal skeletons, skulls, plaster casts and preserved specimens and established a private zoo outside to study the body structure and behaviour of animals.<sup>22)</sup> The sculptures depicting jumping lions, a group of bison defending their children and fighting horses show Pallenberg's excellence at portraying the momentary movements of animals.<sup>23)</sup> Stefan Curth writes, 'When the sculptor approached his work, he had the air more of a scientific illustrator than of an artist. [...] Pallenberg was an illustrator of animals working in three different dimensions.'<sup>24)</sup>

He exchanged specimens with zoo and museum leaders and sketched living animals at zoos. Pallenberg was 'a beneficiary of the emergence of the first zoos and natural history museums of the German-speaking countries in the nineteenth century and the trading of animals that came in their wake.'<sup>25)</sup> In turn, he benefited zoo leaders by providing animal models too. In particular, he produced six life-sized sculptures to adorn the main gate of Hagenbeck's Animal Park. The animal dealer further requested him to restore a series of extinct animals, and Pallenberg would also later sculpt a monument for his tomb.<sup>26)</sup>

## 2.2. Pallenberg's Preliminary Studies in European and American Natural History Museums

Restoring forms of animals that became extinct long ago must have been a severe challenge for Pallenberg, who was meticulously accurate with his animal sculptures and always studied living creatures to represent dynamic movements.<sup>27)</sup>

Initially, he needed to know the anatomical details of prehistoric creatures in natural history museums. *Altonaer Nachrichten* (17 July 1909)<sup>28)</sup> referred to Pallenberg's stay in different European museums on behalf of Hagenbeck, and another article from the same newspaper (3 October 1909) reported the following:

Records of skeletons and reconstructed samples of these creatures from the [South] Kensington Museum and New Yorker Museum were available for the artist's works. He is also in active connection with the leaders of these facilities through sending models, etc., so precise control from the side of specialists is exercised over the sculptor's work. Various participants at the meeting of the German Geological Society [...] have emphasised the scientific and didactic value of these nature-true imitations of primaeval animals with appreciative words.<sup>29)</sup>

Shepstone also wrote that Pallenberg sketched bones of ancient animals and consulted naturalists in European museums during 12 months of preparatory work.

The American Museum of Natural History in New York rendered particularly valuable services in supplying drawings as well as

measurements. Before work was actually commenced in the grounds models were built up in clay, casts taken of them, and these were submitted to leading authorities for opinion.<sup>30)</sup>

After modifications and approval for the miniature models from scientists, Pallenberg constructed the metal frame of the life-sized model and covered it with cement.<sup>31)</sup>

Referring to notes in Pallenberg's sketchbooks archived in the Aquazoo Löbbecke Museum, Martin Bartelmus concludes that he visited natural history museums in Frankfurt, Berlin, Hildesheim, New York, Saint Petersburg and London. In addition, bills of trips show that he stayed in London twice in 1909.<sup>32)</sup>

Thanks to Dr Stefan Curth of the museum, I was also able to study his sketchbooks. A sketchbook (P-SK 16, approximately 1908) contains drawings of extinct creatures such as the diplodocus, iguanodon, plesiosaur, pteranodon, *Dinornis Maximus* (giant moa, extinct bird of New Zealand) and extinct mammals. Another sketchbook (P-SK 1, approximately 1908–10) includes a rough sketch of rocks with an ammonite, a few sail-backed reptiles and birds showing wings with claws. They seem to be the *Archaeopteryx* with a fanged reptilian head, a long tail, clawed arms, and bird-like feathers. The sketch was undoubtedly the draft of artificial rocks for the prehistoric exhibition in Stellingen. Furthermore, a sketchbook archived as P-SK 12 (approximately 1909) contains a rough sketch of dinosaurs corresponding to the animal park's stegosaur and ceratosaur in a fighting stance and allosaur feeding on a carcass. Pallebnerg also drew the *Triceratops*, *Polaganthus* (herbivorous dinosaur covered with spikes), *Teleosaurus* (prehistoric crocodile), dodo (other extinct bird of New Zealand), and other prehistoric animals in this book. These sketchbooks show his intense research on various parts of the skeletons of

extinct creatures.

### 2.3. The Variety and Number of Prehistoric Animals Restored by Pallenberg

In February of 1909, *Neue Hamburger Zeitung* reports about the 'Anthropomorphic collection' relating to the 'Darwin Festival' which celebrated the centenary of Charles Darwin's birth and the 50<sup>th</sup> anniversary of his book's publication (*On the Origin of Species*. 1859). The collection, provided by the company J. F. G. Umlauff and exhibited in the restaurant of Hagenbeck's Animal Park, consisted of specimens such as skeletons, skulls, models of apes and 'primitive' humans so that visitors could compare them in the light of Darwinian theory. Still, Pallenberg's miniature iguanodon, plesiosaur and diplodocus were also there.<sup>33)</sup> Construction of the 'Primaeval Landscape' proceeded in the following months. According to a newspaper article from July, visitors could already see a life-sized iguanodon statue. The restoration of diplodocus was almost finished, and the triceratops would follow them. Animals from the younger period, such as the mammoth, were also planned to be resurrected after the 'saurian' display.<sup>34)</sup>

Hagenbeck could already display a herd of extinct monsters in autumn. According to *Altonaer Nachrichten* (3 October), the restoration of two triceratopses, an ichthyosaur, a *Mastodonsaurus*—large amphibian—and two ancient crocodiles (*Teleosaurus*) was as good as finished. Artificial rocks were under construction on the right side of the lake to accommodate the miniature locomotive inside, and models of the flying reptile and *Archaeopteryx* would adorn their tops.<sup>35)</sup> Articles from 13 to 14 November announced that 14 prehistoric animals were already there. After producing 30 life-size models in total until the following spring, creatures from other periods would be restored

within three years so that the animal park could show all interesting extinct animals.<sup>36)</sup>

On 30 April 1910, *Altonaer Nachrichten* stated, 'The first department of antediluvian animals, together with associated atmospheric horticultural facilities, is now completed.'<sup>37)</sup> The *Iguanodon*, *Diplodocus*, *Triceratops* (two adults and one baby), *Allosaurus* (Figures 3–4), *Brontosaurus*, *Stegosaurus*, *Ceratosaurus*, *Plesiosaurus*, *Mastodonsaurus*, *Ichthyosaurus* and *Pareiosaurus* appear in this article, in addition to '[p]rimaeval turtles, strange crocodile-like animals with high back crests, and smaller lizards', 'enormous flying dragon', 'gigantic dragonfly' and *Archaeopteryx* (Figure 7). Shepstone reported in December that 'some thirty have been erected' and wrote about the roughly same genera as in the German article. However, he also mentioned 'the sloth, dodo, and mammoth',<sup>38)</sup> which have never been erected in the animal park.



**Figure 3–4.** The *Allosaurus* at Hagenbeck's Animal Park (Photographed by the author, 2019) and a scale model of it produced by Pallenberg (Photographed by the author with the permission of the Aquazoo Löbbecke Museum, Düsseldorf (Germany), 2022)

A detailed description, accompanied by photos and illustrations, of the extinct animal models was presented in the guidebook published in April 1911.

Many were only mentioned by genus: the *Diplodocus carnegiei* [sic], *Iguanodon*, *Triceratops prorsus*, *Stegosaurus*, *Allosaurus* (eating a cadaver of *Brontosaurus*), *Ceratosaurus*, *Archäopteryx macrura* [sic], *Plesiosaurus*, *Ichthyosaurus*, *Teleosaurus*, *Dimetrodon*, *Naosaurus* (represented just like the dimetrodon with a sail-like structure on its back), *Pareiosaurus*, *Miotania oweni* (a turtle with a horned shell), *Mastodonsaurus giganteus*, *Pteranodon*, *Rhamphorhynchus* (another kind of flying reptile) and *Meganeura* (giant dragonfly). The '*Aëtosaurus ferratus*', described as 'bird-lizard' (Vogeleidechse),<sup>39)</sup> was also mentioned without any illustrations. However, it might have been confused with the *Rhamphorhynchus*, which appears only as a picture (Figure 5).<sup>40)</sup>

One could only speculate the exact number of full-scale models produced between 1909 and 1910. In many cases, only one full-scale model was made for each species. However, Pallenberg erected three triceratopses and two models of the *Teleosaurus*, and the illustrations in the guidebook show three archaeopteryx and two figures of the *Naosaurus*. Therefore, Hagenbeck exhibited at least 26 models. According to the guidebook, 'many specimens'<sup>41)</sup> of the *Archaeopteryx* were there. If Pallenberg also produced more than one model for each of the two genera of flying reptiles and *Meganeura*, the total number could reach 30.

## 2.4. The Characteristics of Extinct Animals in Stellingen

Pallenberg and Hagenbeck selected the *Iguanodon* and *Diplodocus* as the first models because they were large and would impress visitors, and enough materials were already available in Europe. For example, the Royal Belgian Museum of Natural History (Musée royal d'Histoire naturelle de Belgique) in Brussels has exhibited 11 complete iguanodon skeletons 'in a lifelike gait'<sup>42)</sup>

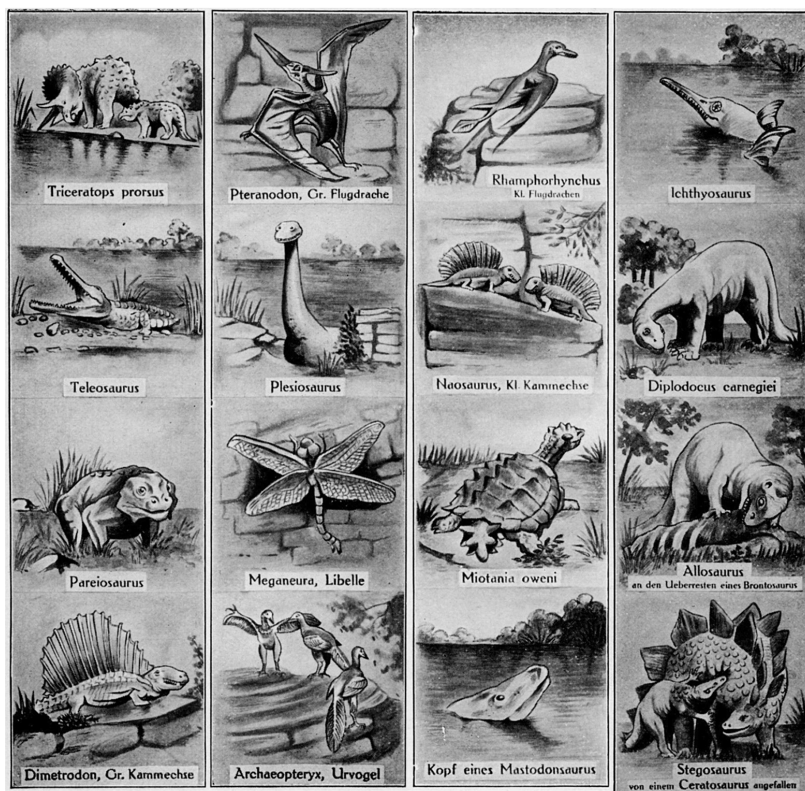


Figure 5. The restored animals by Pallenberg (Flemming, Johs. *Führer durch Carl Hagenbecks Tierpark in Stellingen*. Stellingen: Carl Hagenbecks Eigentum und Verlag, 1911, 37–38. From the author's collection. The author arranged the four series of illustrations in horizontal rows)

since 1902. These skeletons were discovered along with many other fossils in the 1870s–80s in a coal mine in Bernissart. In addition, the plaster skeletons of *Diplodocus carnegii*, whose name derived from the steel baron Carnegie, were presented by him to museums in London, Berlin and Paris between 1905 and 1908 (Vienna, Bologna, St. Petersburg and other cities would follow by 1934).



The arrival of the original skeleton of *Diplodocus longus*, sent from the American Museum to the Senckenberg Museum in Frankfurt am Main, complemented the ‘invasion’ of American dinosaurs.<sup>43)</sup>

While these early models show fewer movements, others offer more dramatic postures. For instance, a triceratops sinks its head, sticking horns against another half-submerging in the water. Later, a baby triceratops was placed behind the former.<sup>44)</sup> An allosaur bites off the flesh of a dead brontosaur, and a stegosaur fends off a ceratosaur (Figure 6). The formidable spikes of that herbivore protrude from the attacker’s tail, while the latter gives a deadly bite on its body at the exact moment. The carnivorous dinosaurs more or less demonstrate their agility in contrast to their herbivorous counterparts. All of the dinosaurs appear near the lake, indicating their close relationship with the water.



Figure 6. The *Ceratosaurus* attacking a *Stegosaurus*  
(Photographed by the author, 2022)



In addition, the aquatic *Ichthyosaurus*, *Plesiosaurus* and *Mastodonsaurus* were exhibited in the lake or on its shore. A picture from 1910 shows a *Dimetrodon* appearing from the water.<sup>45)</sup> Smaller models of the *Archaeopteryx*, *Pteranodon*, *Naosaurus* and *Meganeura* were on the rocks on both sides of the lake (Figure 7). These rocks were removed or destroyed during or after World War II (1939–45); therefore, it is difficult to discern their exact locations. Judging from available texts and pictures, models of the *Archaeopteryx* and *Meganeura* seem to have been on the rocks at the right bank of the lake. The *Pteranodon* and *Naosaurus* were probably around rocks at the left bank.<sup>46)</sup> However, copies of those creatures might have been dispersed on both sides of the lake.

How could we interpret the forms and relationships of extinct animals

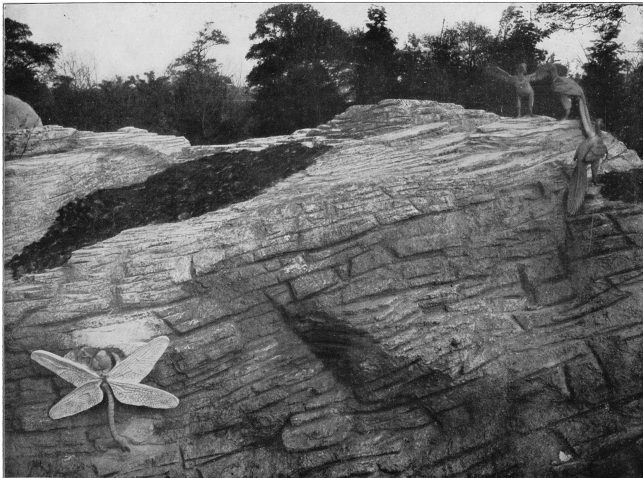


Figure 7. Models of the *Archaeopteryx* and *Meganeura* mounted on the artificial rock (Schiffel, Rudolph. 'Vorweltliche Tiere in Carl Hagenbecks Tierpark in Stellingen.' *Illustrierte Zeitung*. 137. 3558, 7 September 1911, 393. From the author's collection)

represented by these models considering their cultural–historical context? In my opinion, the ‘primaeval landscape’ at Hagenbeck’s Animal Park related to debates in the scientific community, historical events in which Hagenbeck was personally involved, and the popular imagery of living beings struggling for survival at the beginning of the 20<sup>th</sup> century.

### 3. The Cultural–Historical Consideration of Hagenbeck’s Dinosaurs

#### 3.1. Agile Carnivores and Amphibious Herbivores: The Image of Dinosaurs in the 1900s

As described in Chapter 2, Pallenberg consulted experts when sculpting extinct creatures. He must have also referred to literature and preceding arts to understand their ‘correct’ forms and characters. Therefore, his models were inevitably affected by the scientific or popular view of prehistoric animals at that time.

Let us overview the progress of scientific research and arts relating to extinct animals, particularly dinosaurs, since the middle of the 19<sup>th</sup> century. In the 1850s, Waterhouse Hawkins first restored full-scale models of extinct animals, including the dinosaur *Megalosaurus*, *Iguanodon* and *Hylaeosaurus*, under the instruction of a scientist, Owen. Due to the unavailability of fossils, Owen supposed these dinosaurs to have stood on four legs, just like a rhinoceros, and Hawkins followed his idea.

However, discoveries in North America and Europe considerably changed the image of dinosaurs. The fossils of *Hadrosaurus* and *Laelaps* (*Dryptosaurus*), found by American researchers, and iguanodon from Bernissart indicated that certain dinosaurs were bipedal and had a kangaroo-like posture. Regarding the *Laelaps*, a carnivorous dinosaur like megalosaur, a representative American palaeontologist Edward D. Cope (1840–97) described it as an agile hunter

possessing 'great powers of leaping.'<sup>47)</sup> He also noticed the similarity of its hind legs to birds and suggested that the *Laelaps* captured prey with its feet. Later, Knight illustrated two individuals of this species actively fighting or playing with each other under his supervision (1897).<sup>48)</sup>

The similarity of dinosaurs' posterior bodies with birds was also discussed in the debate over the theory of evolution. After Darwin published *On the Origin of Species* (1859), there was a controversy about the hypothesis that the long-lasting gradual modification of body parts due to natural selection would cause the divergence between species. Consequently, Thomas H. Huxley (1825–95), a British biologist and advocate of Darwin, challenged to show the origin of birds from reptiles by investigating fossils of extinct animals. Huxley highlighted that dinosaurs possessed the hind quarters 'wonderfully approached those of birds in their general structure' and 'these extinct reptiles were more closely allied to birds than any which now live.'<sup>49)</sup> The Pallenberg's allosaur, which presses its prey with a hind leg like an eagle, and the ceratosaur, represented as an agile hunter, could easily be associated with the image of bird-like dinosaurs.<sup>50)</sup>

However, Huxley's emphasis on the bird-like character of dinosaurs did not obliterate the image of dinosaurs as *great reptiles*, as W. J. T. Mitchell writes.<sup>51)</sup> The association with the water often emphasised their 'saurian' character.

For example, Othniel C. Marsh (1831–99), another representative American palaeontologist, described that the brontosaurus was 'more or less amphibious, and its food was probably aquatic plants or other succulent vegetation.'<sup>52)</sup> The Knight's painting of brontosaurus (1897) must have strengthened the image of amphibious sauropods. Moreover, the association with water was not limited to the gigantic dinosaurs. Henry N. Hutchinson (1856–1927), the author of a well-illustrated popular book *Extinct Monsters*,

wrote that the iguanodon probably 'passed much of its time in the water'<sup>53)</sup> and that the stegosaur also lived in the vicinity of water.<sup>54)</sup> Regarding the triceratops, Richard S. Lull (1867–1957), who wrote the second part of John B. Hatcher's book *The Ceratopsia* (1907), emphasised that they inhabited 'the lowlands in a swamp or delta region',<sup>55)</sup> and the over-adaptation to swamps caused its extinction in the period of environmental change. In his book, Knight again painted triceratopses walking in the water-rich area.

Such descriptions and paintings help explain why Pallenberg and Hagenbeck placed dinosaur models around or in the lake. Being semiaquatic creatures, they could not be far from the water (Figure 8).



Figure 8. The 'Primaeval Landscape' in Hagenbeck's Animal Park  
(Flemming 1911, 36. From the author's collection)

### 3.2. Raiders of the Lost Creatures

The image of dinosaurs dwelling in or around the water appears to have gone beyond influencing the 'Primaeval Landscape' design and triggered the search for living dinosaurs by Hagenbeck. Before constructing the dinosaur

exhibition, he had famously sent an expedition to the swampy region in Rhodesia, the then British colony, to find a sauropod. 'A few years ago,' Hagenbeck explained in his *Beasts and Men* (1908), he received strange reports from his traveller and an English hunter. Although they went to the interior of Rhodesia from different directions, both received accounts from the indigenous people about the appearance of a monster, 'half elephant, half dragon, dwelling in the inaccessible swamps.' Subsequently, he recalled that Josef Menges, one of his travellers, had told him about a similar beast several decades ago.

Moreover, the natives in the interior of Africa reportedly painted such animals on the wall of caves. 'According to everything that has come to my attention, it can only be a kind of Brontosaurus.'<sup>56)</sup> Having been convinced that one or more dinosaurs still survived in Rhodesia, he dispatched an expedition there. However, the explorers returned unsuccessfully, having suffered from severe febrile illness and attacks from indigenous people in the extensive swamps.

Although Hagenbeck did not mention the precise route or period of the dinosaur expedition, his words suggest that he searched for a brontosaur around 1905. Hans Schomburgk, an African researcher, also wrote an interesting story about that dinosaur. The native people once told him during his stay at Lake Bangweolo, now situated in Zambia, that an amphibious monster, smaller than hippos but feeding on them, lived in the lake. Although Schomburgk considered it a folktale, he told Hagenbeck. Subsequently, Hagenbeck successfully changed the mind of the sceptical man to believe it must have been a dinosaur.<sup>57)</sup> As Daniel Loxton and Donald R. Prothero highlight, it is difficult to understand why Hagenbeck so strongly believed that a kind of sauropod must have survived in the water-filled area without considering the amphibious brontosaur's public image.<sup>58)</sup>

Interestingly, Africa also began to attract the attention of the German public as the location for fossil hunting at that time. In 1907, the palaeontologist Eberhard Fraas reported about the large sauropod bone he observed during his stay at the newly found fossil-rich site of 'Tendaguru Beds' in German East Africa.<sup>59)</sup> In response to his call for systematic research, an expedition led by Werner Janensch was sent to the site and excavated fossils with great success. According to a newspaper article from 1911, 70,000 kg of fossils from the Tendaguru arrived in Berlin, and the emperor Wilhelm II was so excited by the expedition that he ordered further reports about it.<sup>60)</sup>

Fraas later had an opportunity to write about the extinct monsters at Hagenbeck's park for a journal *Colony and Homeland* (*Kolonie und Heimat*), adding some information about the Tendaguru dinosaurs. After admitting that researchers had found enormous dinosaurs predominantly in North America, he stressed that sauropods from German East Africa would surpass American rivals in size. '[B]ecause, for example, while the upper arm bone of the 22-metre-long *Diplodocus Carnegie* [sic] is barely 1 metre long, such skeletal parts of over 2 metres in length were found at the Tendaguru, size ratios that never have been observed before.'<sup>61)</sup>

In the German Empire, palaeontological and imperialistic interests were aligned. While German palaeontologists dug up large bones, Hagenbeck's hunters wandered in Africa searching for a living dinosaur.

### 3.3. The 'Struggle for Existence' between Dinosaurs

The story of the Hagenbeck's dinosaur hunters reminds us of Arthur Conan Doyle's science fiction *The Lost World* (1912), which features the encounter of an expedition led by Professor Challenger with various prehistoric animals on the 'Maple White Land' deep in the Amazon. The Hamburger

animal dealer and Doyle believed that relics of extinct animals might have survived in the southern areas far away from Europe. Doworsky suggests that such an idea came from the widely accepted theory that 'the living being has adapted to a series of environmental changes in its efforts.' Conversely, 'If the environment has not changed, the life in it should not have changed either.'<sup>62)</sup> Because certain regions of South America and Africa were believed to have remained relatively unchanged since ancient times, the animals there must be unchanged.

Furthermore, Hagenbeck and Doyle believed that the 'struggle for existence' must have influenced creatures in the lost world. In the latter's novel, adventurers on the Maple White Land glimpse a predatory monster after hearing a horrifying scream one night. In the morning, they discover what had happened:

The iguanodon glade was the scene of a horrible butchery. [...] [O]n examining the remains more closely we discovered that all this carnage came from one of these unwieldy monsters, which had been literally torn to pieces by some creature not larger, perhaps, but far more ferocious, than itself.<sup>63)</sup>

Indeed, dinosaurs and other primaeval reptiles on the isolated land, roughly corresponding to those animals restored in Stellingen, fight without rest as a 'part of the strange struggle for existence.'<sup>64)</sup> In addition, there was a 'merciless war'<sup>65)</sup> between ape-men and 'Indians' who had allegedly ventured to the land during the younger period when mammals became dominant and humans developed.

The prehistoric animals at Hagenbeck's Animal Park acted in a similar

manner, as Shepstone wrote:

Although the biggest creature that ever walked on four legs, it was singularly ill-fitted for holding its own in the struggle for existence and was, no doubt, killed off by the smaller but more powerfully-built carnivorous dinosaurs of that day. [...] Indeed, the atmosphere in those far-off times must have been continuously rent with the roars of these huge beasts as they engaged one another in mortal combat. Although they had the earth to themselves they were anything but a happy family, and were continuously at war.<sup>66)</sup>

Charles Darwin's term 'struggle for existence' ('Kampf ums Dasein' in German) influenced the representation of the lost world. As suggested in previous studies, the fight among extinct animals was already depicted in the paintings before Darwin's book was published.<sup>67)</sup> Furthermore, Darwin used this term beyond 'mortal combat' (in Shepstone's words) to describe the complex relationships among species.<sup>68)</sup> For example, it is also a struggle for life when a specific plant disseminates seeds with the help of other species, such as birds, to have an advantage over other plants. Even so, his term could be widely applied to enhance the traditional image of 'nature red in tooth and claw' as his evolution theory gained acceptance.

Moreover, 'The metaphor of struggle of existence resulted in the diffusion rather than convergence of meanings.'<sup>69)</sup> Therefore, the term could have multiple meanings and apply to human individuals living at a time of growing industrial and colonial interests. Mitchell suggests that the scenes of fighting dinosaurs, also represented by Knight, could have reflected the social situation in the US.



Knight's scenes of single combat between heavily armored leviathans are paleontological equivalent of that other war of giants, the struggles among the "robber barons" in late-nineteenth-century America. This period, so often portrayed as the era of "social Darwinism", economic "survival of the fittest," ruthless competition, and the formation of giant corporate entities headed by gigantic individuals, is aptly summarized by the Darwinian icon of giant reptiles in a fight to the death.<sup>70)</sup>

In addition, he argues that the analogy between fighting dinosaurs and competing 'gigantic' persons was not accidental. Discoveries of famous dinosaurs were impossible without the financial support of Andrew Carnegie, George Peabody and other American aristocrats 'who were carving out the new feudal order in the United States.'<sup>71)</sup>

In Germany, there was a similar analogy between Pallenberg's Dinosaurs and Carl Hagenbeck. 'If one [...] would do a questionnaire: what are the names of the most famous men in the world—it is pretty certain that Carl Hagenbeck would have his place among them,' as an article of the *Berliner Tageblatt und Handels-Zeitung* states. People 'in cold south Patagonia, in warm Sudan, in Greenland or deep in Asia, who do not know the names of European kings and emperors, know the name Hagenbeck well just as every child with us knows him.'<sup>72)</sup> The writer also paralleled Hagenbeck and Ferdinand von Zeppelin (1838–1917), the builder of gigantic airships, as the most famous persons in Germany.

According to a newspaper article from 1908, Hagenbeck once commented that animal trade is the most challenging activity because of feeding, maintenance and transportation expenses and that he could not have survived without exhibiting indigenous people from remote countries and trained

animals.<sup>73)</sup> After a long-term endeavour since the late 19<sup>th</sup> century, he became the 'primus of the industry' with the title *King of Animals* (*König der Tiere*)<sup>74)</sup> and let Pallenberg produce the monsters struggling for life in the prehistoric landscape.

### 3.4. The Hagenbeck's Animal Park as a Representation of the Earth's History

Regarding such characteristics of the 'Primaeval Landscape', it was not just the 'most realistic variation of the lost world' at that time. It was more 'real' than the original by meeting people's expectations. According to the popular image of dinosaurs, they should have lived in water-filled areas and struggled with each other, as individuals and nations did in the age of empires. This exhibition reminds us of the term 'simulacrum,' which initially meant a representation of something. Based on Jean Baudrillard's consideration, Hiroki Azuma argued that the simulacrum has the same value as the original for consumers if they possess enough reality that the original expected to have. The simulacrum often blurs the boundary between the 'original' and the 'copy'.<sup>75)</sup> Perhaps the dinosaurs appearing in Michael Crichton's *Jurassic Park* (1990) are typical ones.

In this novel, a scientist attempts to resurrect dinosaurs by assembling DNA fragments; however, he knows that his animals are the result of his guesswork, saying: 'We haven't *re-created* the past here. The past is gone. It can never be re-created. What we've done is *reconstruct* the past—or at least a version of the past.'<sup>76)</sup> Subsequently, he proposes to the park owner to improve them to meet visitors' expectations. The prehistoric landscape at Jurassic Park was also one of the reconstructed versions of the past. The similarity between the dinosaur exhibition in Stellingen and that on the fictitious island is not

superficial. Although the former reflected ideas about the pre-Adamite world prevalent in the early 20th century, it shares the nature of a simulacrum with the latter. For observers, they are as 'real' as the lost original or even *better*.

Furthermore, the primaeval panorama formed a part of Hagenbeck's Animal Park, which 'offered a geographical overview of the animals from every continent and at the same time an image of evolution.'<sup>77)</sup> The iconic figure of the park as a representation of the earth's history was the high mountain towering in the centre of all exhibitions. Designed by Swiss sculptor Urs Eggenschwyler (1849–1923), it revealed the process of mountain formation over incredibly extended periods. The granite topping the peak shows that the burning liquid protruded from the oldest earth's crust and reached heights accompanied by other stone layers of slate, marl, lime and sandstone. On the northern and eastern sides of the mountain, visitors could see rocks weathered by the atmospheric effect.<sup>78)</sup>

When the Crystal Palace reopened at Sydenham in 1854, its producers also intended to display the entire history of our planet. The park outside the building exhibited the first full-scale models of dinosaurs while stuffed modern animals, plants, figures of native people around the world, replicas of historical buildings and industrial products were displayed inside.<sup>79)</sup> However, these men, including Hawkins' supervisor Owen who supported the creation theory, opposed exhibiting ancient animals in a way that would remind viewers of evolutionary theory. Consequently, each group of prehistoric creatures from different periods were placed on separate islands to represent 'gaps' between them.

Was there a 'missing link' between exhibitions in Sydenham and Stellingen? The 'Palaeozoic Museum', which was planned in New York but never completed, could be it. When Waterhouse Hawkins stayed in the US in

the late 1860s, he was requested to restore extinct American animals for the museum with the assistance of palaeontologists Cope and Joseph Leidy (1823–91). Although gangs sent by a local politician destroyed his products, the draft pictures of the museum show groups of animals from different periods struggling with each other on a contiguous terrain.<sup>80)</sup>

In Stellingen, visitors could feel the continuity of life through several objects besides the high mountain. They walked into the rocks forming a part of the 'Primaeval Landscape' to observe modern 'descendants' of prehistoric animals. According to the guidebook, the inside facility showed freshwater fish, amphibians, reptiles and insects among ferns and creepers.<sup>81)</sup> By comparing them with the giant extinct monsters outside, visitors could vaguely understand the process of evolution. Furthermore, they could extend the idea to other zoological and ethnological exhibitions in the park.<sup>82)</sup> Models of the *Archaeopteryx* were indispensable for Hagenbeck because scientists like Huxley regarded it as one example suggesting the divergence of birds from reptiles<sup>83)</sup>; therefore, it was a symbolic icon of the Darwinian theory.

### Conclusion: Hagenbeck's Uncompleted Plan and the Immortal Dinosaurs

Hagenbeck and Pallenberg planned to enlarge the 'Primaeval Landscape' in Stellingen by restoring more animals in three years. According to an English newspaper article, the number of resurrected animals would be at least 100.<sup>84)</sup> The animal trader also wanted to add more facilities accommodating modern animals to make his animal park the 'most interesting and biggest zoological garden in the world' 10 years later.<sup>85)</sup>

Pallenberg visited Argentina to study extinct animals of the 'Argentinian pampa' for Hagenbeck in 1910 and in the years following. Robert Lehmann-Nitzsche, who led the anthropology department of the La Plata Museum,

learned about his activity and proposed to him to make two restorations of each animal so that the Argentinian could construct another 'Palaeontological Park' in La Plata.<sup>86)</sup> In a letter dated 4 January 1912, Hagenbeck asked if Pallenberg wanted to access the people relating to the Tendaguru expedition to restore any of the animals unearthed there.<sup>87)</sup> This letter suggests that the animal dealer intended to resurrect extinct beasts from the German colony. However, the Argentinian palaeontological park plan did not eventuate,<sup>88)</sup> nor did the 'Primaeval Landscape' enlargement in Stellingen.

Hagenbeck died the following year. The expansion of the European empires resulted in World War I (1914–1918), and starving animals died one after another at his park. Following the war, the animal park had to sell the surviving animals and temporally close.<sup>89)</sup>

During the interwar period, when the animal park recovered from damages, Carl Hagenbeck's successors, Heinrich and Lorenz, maintained an interest in prehistoric animals. Since 1928, Heinrich cooperated with John T. Millen to develop the Detroit Zoo by applying the 'free-view system'. Millen had once worked at Hagenbeck's Animal Park and was then director of the Detroit Zoo.<sup>90)</sup> In a letter dated 6 June 1928, Heinrich wrote to Pallenberg about his travel to Detroit and a plan of the prehistoric landscape with 27 animal models (for the city's zoo?).<sup>91)</sup> Pallenberg also stayed in Detroit, producing facades for the zoo's animal houses, and he expressed his wish to make full-size restorations of extinct animals<sup>92)</sup>; however, further research on the consequences of this is required. In addition, the Japanese resurrected a brontosaur, an iguanodon and a half-submerging triceratops at the Higashiyama Zoo in 1938. The zoo in Nagoya was designed after Hagenbeck's Animal Park and imported the idea of a dinosaur exhibition.<sup>93)</sup>

However, Pallenberg's old models, tiny ones particularly, were gradually

weathered. In the mid-30s, Heinrich wrote Pallenberg that the smaller models, such as lizards, archaeopteryx, and dragonflies, suffered immensely and needed immediate repair.<sup>94)</sup> It appears they were not repaired and vanished together with the rocks during or after World War II.

World War II brought more apocalyptic disasters to the animal park. On the night of the 24-25 July 1943, the allied air force bombed it killing nine people and 120 large animals and destroying buildings. Furthermore, many animals, which lost their accommodation, were shot.<sup>95)</sup> The war also hit Pallenberg seriously: a bomb exploded at his workshop, causing the loss of animals and sculptures, and the sculptor died just after the end of the war, apparently because of the tremendous stress.<sup>96)</sup>

However, many of his extinct animals survived the war. Why not? They do not need to be fed and can resist physical damage thanks to the solid material covering them. As far as I could observe in August of 2022, the following models remain (one model of each): *Diplodocus*, *Iguanodon*, *Allosaurus*, *Brontosaurus* (as a carcass), *Stegosaurus*, *Ceratosaurus*, *Plesiosaurus*, *Ichthyosaurus*, *Mastodonsaurus*, *Pareiosaurus*, *Miolania*. There are also two models of the *Teleosaurus* and three of the *Triceratops*.

In the corner of the historical animal park, extinct monsters are still roaming or fighting around the lake in Stellingen, as a talented German sculptor resurrected them over hundred years ago.

**About the author:** Yuichi Mizoi is a Professor at Kansai University, Faculty of Letters. His interests are focused on the cultural history of animal exhibitions and folktales. One of his recent publications is *Suizoku-kan no bunka-shi: Hito dobutsu mono ga orinasu majutsu-teki sekai* 水族館の文化史：ひと・動物・モノがおりなす魔術的世界 (*The Exhibition of Oceans: The Cultural History of*

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- 78) Flemming 1911, 5–6. The mountain reminds us of the Maple White Land again. In Doyle's novel, all living forms from different periods coexist—albeit not in peace—on the land uplifted by tectonic movements.
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- 80) Dworsky 2011, 89, Debus & Debus 2002, 45–46.
- 81) Flemming 1911, 39–40. The new aquarium at the Berlin Zoo (opened in 1913) also combined extinct animals restored as the facade and sculpture outside and modern animals exhibited inside. Nieuwland, Ilja. 'Dinosaurs in the Aquarium.' *Historical Moments Essay*. 29. 6 (2020): 655–663.
- 82) Ilja Nieuwland also writes, 'The display [of prehistoric animals at Hagenbeck's park] successfully tied notions of extinct life to extant nature [...]. It also allowed people to compare extinct animals with 'whatever else the zoo had to offer.' Nieuwland 2020, 656.
- 83) Huxley 1868, 70.
- 84) 'Extinct animals at Stellingen.' *Field*. 8 January 1910, 52(74).
- 85) 'Hagenbecks Zukunftspläne.' *Hamburgischer Correspondent und neue hamburgische Börsen-Halle*. 13 November 1909, 11.

- 86) Bartelmus 2020, 15, 'El Parque paleontológico de La Plata.' *El Día*. 25 (23?) September 1910. n. p. I have referred to a German Translation held in the Aquazoo Löbbecke Museum.
- 87) Hagenbeck, Carl. Letter to Josef Pallenberg. 4 January 1912. The Aquazoo Löbbecke Museum, Düsseldorf.
- 88) Bartelmus 2020, 15.
- 89) Gretzschel, Matthias, Klaus Gille and Michael Zapf. *Hagenbeck: Ein zoologisches Paradies*. Hamburg: Edition Temmen, 2009, 94–96.
- 90) Dittrich & Rieke-Müller 1998, 292–293.
- 91) Hagenbeck, Heinrich. Letter to Josef Pallenberg. 6 June 1928. The Aquazoo Löbbecke Museum, Düsseldorf.
- 92) 'Deutscher Bildhauer für Detroits Zoo.' *Volkszeitung-Tribune*. 2 May 1931, 1.
- 93) Ogawa, Tsuyoshi 小川 健, Masao Watanabe 渡辺正雄 and Shinji Kawabe 河辺伸二. 'Taisen wo ikinuita konkurito zo: Nagoya Higashiyama dobutsuen ni imamo hissorito seisoku suru kyoryu tachi 大戦を生き抜いたコンクリート像—名古屋東山動物園に今もひっそりと生息する恐竜たち.' *Concrete Journal*. 48.1 (2010): 128–130.
- 94) Hagenbeck, Heinrich. Letter to Josef Pallenberg. 16 December 1935, 6 December 1937. The Aquazoo Löbbecke Museum, Düsseldorf.
- 95) Gretzschel 2009, 109–111.
- 96) Bartelmus 2020, 27.